

LINKED-LIST IMPLEMENTATION OF A DATA STRUCTURE WITH CONCURRENT NON-BLOCKING INSERT AND REMOVE OPERATIONS

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ABSTRACT OF THE DISCLOSURE

5 A simple and therefore highly usable non-blocking implementations of linked-
lists can be provided using read, write, and CAS operations. Several realizations of
linked-list based data-structures are described, which are non-blocking, linearizable,
and exhibit disjoint-access for most operations. In other words, the realizations are
non-blocking and linearizable while maintaining the property that operations on
10 disjoint parts of the list do not interact, effectively lowering contention and increasing
concurrency. We implement three exemplary data structures: sets, multi-sets, and
ordered-sets. The exemplary implementations support insert, remove, and find
operations, with natural semantics. An ordered-set implementation supports an
additional removeGE operation.